International Journal of Research and Review
[Indexed, Peer-Reviewed Journal]
Volume 13; Issue: 8; August 2026
Website: www.ijrrjournal.com
Research Paper *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

Influence of Cultural and Socio-Economic Factors on the Nutritional Status of Pregnant Women in Garowe Camps of Internally Displaced Persons, Puntland, Somalia

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DOI: https://doi.org/10.52403/ijrr.20260828

ABSTRACT

This study was conducted in Garowe IDP camps with the aim of examining the influence of socio-cultural and socio-economic factors on nutritional status of pregnant women in Garowe IPDs camps. Specifically, the study assessed the association between cultural beliefs, food taboos, household socio-economic characteristics, and maternal nutritional status among pregnant women attending Barwaqo, Jilab, and Jowle Health Centers.

This is a descriptive, cross-sectional survey design with mixed-methods A total of 218 pregnant women were registered during the study period; 180 participants had complete nutritional-status data and were included in the outcome analyses. The study revealed that multiple factors significantly influence the nutritional status of pregnant women in IDP camps.

The findings showed that both cultural and socio-economic factors were significantly associated with the nutritional status of pregnant women. Restrictive cultural beliefs and food taboos were associated with poorer nutritional status (OR = 0.57, 95% CI: 0.36–0.90, p = 0.019), while better socio-economic conditions increased the likelihood of normal nutritional status (OR = 1.82, 95% CI: 1.23–2.69, p = 0.003).

Targeted interventions should address harmful cultural beliefs and food taboos, strengthen women's economic empowerment and household livelihoods, improve access to nutritious foods and maternal health services, and integrate culturally sensitive nutrition counseling into routine antenatal care to improve maternal nutritional status among pregnant women in IDP camps.

Keywords: Nutritional status; maternal nutrition; socio-cultural factors; socio-economic status; pregnant women; internally displaced persons (IDPs).

1. INTRODUCTION

Maternal nutrition during pregnancy is fundamental to maternal health, fetal growth, and favorable birth outcomes. Pregnancy increases nutritional requirements, and inadequate maternal nutrition can contribute to poor maternal and fetal outcomes. Maternal nutrition is influenced not only by individual dietary practices but also by the food, health, water and sanitation, education, and social-protection systems surrounding women (United Nations Children's Fund [UNICEF], 2022).

eat. A systematic review found that cultural beliefs can strongly influence food patterns, recommendations, and restrictions during pregnancy, with food-related information often transmitted through family and

community networks (de Diego-Cordero et al., 2021). Reviews from Ethiopia and sub-Saharan Africa similarly document food-taboo practices among pregnant women and emphasize the potential consequences of restricting nutrient-rich foods (Gebregziabher et al., 2023; Debela et al., 2023).

Socio-economic conditions are also important determinants of maternal nutrition. Food insecurity can limit the quantity, quality, and diversity of foods available to pregnant women and is associated with adverse maternal and pregnancy-related outcomes (Augusto et al., 2020; McKay et al., 2022). In humanitarian settings, these challenges may be intensified by displacement, poverty, disrupted services, and reduced access to nutritious foods. UNICEF guidance for humanitarian settings emphasizes integrated responses involving nutrition services, food assistance, social protection, and nutrition counselling (UNICEF & Global Nutrition Cluster, 2024).

Despite increasing attention to maternal nutrition in humanitarian settings, limited empirical evidence has examined the combined influence of cultural and socio-economic factors on the nutritional status of pregnant women living in IDP camps in Garowe. In particular, evidence from women attending Barwaqo, Jilab, and Jowle Health Centers remains limited. Therefore, this study assessed the influence of cultural and socio-economic factors on the nutritional status of pregnant women attending these health centers in Garowe, Puntland, Somalia. The findings are intended to inform culturally appropriate maternal nutrition interventions and strategies addressing socio-economic barriers to adequate nutrition.

2. MATERIALS AND METHODS

2.1. Description of the Study Location

Garowe is the administrative capital of Puntland State and hosts multiple IDP settlements. A joint IDP site verification conducted in June 2021 identified 25 IDP sites in Garowe, hosting 8,535 households and 51,670 individuals (United Nations High Commissioner for Refugees [UNHCR], 2021). The displaced population may face limited livelihood opportunities and constrained access to essential services, increasing vulnerability to food insecurity and poor nutritional outcomes.

2.2. Study Design and Setting

A descriptive cross-sectional study employing a mixed-methods approach was conducted among pregnant women attending antenatal care (ANC) services at Barwaqo, Jilab, and Jowle Health Centers located in internally displaced persons (IDP) camps in Garowe, Puntland State, Somalia. The study was designed to assess the influence of socio-cultural and socio-economic factors on the nutritional status of pregnant women. The quantitative component determined the prevalence of maternal undernutrition and examined associations between study variables, while the qualitative component explored participants' perceptions and experiences regarding maternal nutrition and cultural influences.

2.3. Inclusion and Exclusion Criteria

Pregnant Women were eligible to participate if they were aged 18 years or older, resided in the selected IDP camps, attended ANC services at one of the three health facilities, had no chronic medical conditions known to influence nutritional status, and voluntarily provided informed consent. Pregnant women younger than 18 years, women with chronic illnesses such as HIV infection, tuberculosis, or diabetes mellitus, non-IDP residents, and those who declined participation were excluded from the study.

2.4 Study Sample

We used systematic random sampling with a purposive sampling technique, surveying all pregnant women attending ANC services at Barwaqo, Jilab, and Jowle Health Centers during the study period and met the inclusion criteria and provided consent. A total of 218 pregnant women were registered during the study period.

2.5. Data Collection Tools and Techniques

2.5.1. Data Collection Procedures

A letter requesting authorization to conduct the study at the selected health centers was submitted to the Puntland Ministry of Health. Data collection commenced after the required authorization had been obtained.

Quantitative data were collected using interviewer-administered structured questionnaires. The questionnaire captured information on socio-demographic characteristics, socio-economic factors, household income, employment status, educational level, household food security, access to food and health services, and cultural factors, including food taboos, cultural beliefs, and traditional practices related to maternal nutrition during pregnancy.

Qualitative data were collected through focus group discussions with pregnant women and key informant interviews with healthcare workers and nutrition personnel to explore cultural beliefs, food taboos, socio-economic challenges, and other contextual factors influencing the nutritional status of pregnant women residing in the IDP camps.

Maternal nutritional status was assessed using Mid-Upper Arm Circumference (MUAC), observable clinical signs of malnutrition, and hemoglobin levels extracted from routine ANC records.

2.5.2. Data Analysis

Data were coded, entered into Microsoft Excel for cleaning, and exported to SPSS Statistics version 26.0 for analysis.

Descriptive statistics (frequencies, percentages, means, and standard deviation) were used to summarize participants' socio-demographic characteristics socio-economic factors, socio-cultural factors, and nutritional status.

A multivariate analysis was then performed using Pearson's chi-square test. Finally, logistic regression was performed by calculating the odds ratio and its 95% confidence interval between the response variable and the independent variables. Only variables with a p-value < 0.05 at this level were considered predictors of of maternal nutritional status. Pearson correlation analysis was also performed to examine relationships between selected continuous variables.

Qualitative data obtained from FGDs and KIIs and analyzed using thematic analysis.

2.5.3. Ethical Considerations

Ethical approval for the study was obtained from the Kenya Methodist University Ethical Review Committee. Permission to conduct the study was granted by the Ministry of Health, Puntland State, Somalia. Before data collection, the purpose of the study was presented to participants. Only respondents who gave their consent were included in our study. The survey was conducted with strict respect for confidentiality and respondent anonymity

3. RESULTS

3.1. Description of the Sample

The tables below provide a detailed description of the various characteristics of our study sample. Tables 1-4 illustrate the Profile of the Respondents, Nutritional Status of Pregnant Women, socio-cultural and The socio-economic status of Pregnant Women respectively.

Table 1 Profile of the Respondents

Category	Item	Frequency(f)	Percentage (%)
Age Group	Below 20 years	19	9.3
	21-30 years	75	36.8
	31-40 years	83	40.7
	41 years & above	27	13.2
Marital Status	Single	47	23.0
	Married	157	77.0
Level of Education	No formal education	30	14.7
	Primary education	68	33.3
	Secondary education	42	20.6

	Tertiary Education	64	31.4
Occupation	Housewife	70	34.3
	Self-employed	39	19.1
	Government worker	46	22.5
	Unemployed	49	24.0

Source: Primary Data (2025)

Table 2 Overall Nutritional Status Indicators Among Pregnant Women (N = 180)

MID-UPPER ARM CIRCUMFERENCE(MUAC) STATUS

Variable	Normal (MUAC ≥ 23.0 cm)	Mild Undernutrition (MUAC 21.0 – 22.9 cm)	Moderate Undernutrition (MUAC < 21.0 cm)	Total (N)	Prevalence of Undernutrition (< 23.0 cm)
Barwaqo	18	24	8	50	64.0%
Jilab	12	22	16	50	76.0%
Jowle	15	30	35	80	81.3%
Total	45	76	59	180	75.0%

FREQUENCY OF OBSERVABLE PHYSICAL SIGNS OF MALNUTRITION

Physical Sign	Present (Frequency)	Absent (Frequency)	Total (N)	Prevalence
Pallor (Pale eyelids/palms/gums)	112	68	180	62.2%
Pedal Edema (Swelling in feet/ankles)	34	146	180	18.9%
Skin/Hair Changes (Dry, flaky skin, thinning hair)	95	85	180	52.8%
Wasting/Thinness (Visibly underweight)	48	132	180	26.7%

HEMOGLOBIN LEVELS AND ANEMIA CLASSIFICATION

Health Center	Normal (≥ 11.0 g/dL)	Mild Anemia (10.0 – 10.9 g/dL)	Moderate Anemia (7.0 – 9.9 g/dL)	Severe Anemia (< 7.0 g/dL)	Total (N)		Prevalence of Anemia (< 11.0 g/dL)
Barwaqo	6	15	20	9	50		88.0%
Jilab	2	8	22	18	50		96.0%
Jowle	1	10	35	34	80		98.8%
Total	9	33	77	61	180		95.0%

Table 3 Cultural Factors among Pregnant Women (N = 180)

cultural Factor	Mean ± SD
Food taboos during pregnancy	3.80 ± 1.29
Belief that some foods cause illness during pregnancy	3.80 ± 1.47
Women's role in household food decisions	3.25 ± 1.38
Social networks influence food choices	3.70 ± 1.27
Avoidance of certain foods due to traditional beliefs	**4.05 ± 1.29**
Traditional beliefs affect food preparation and consumption	3.90 ± 1.30
Family support for healthy eating during pregnancy	3.60 ± 1.36
Beliefs about illness influence dietary choices	3.90 ± 1.22
Elder family members decide suitable foods for pregnant women	**4.05 ± 1.16**
Cultural practices limit access to nutritious foods	3.75 ± 1.18

Values are presented as mean ± standard deviation (5-point Likert scale).

Table 4 Socio-economic Factors among Pregnant Women (N = 180)

Socio-economic Factor	Mean ± SD
Household income sufficient to meet basic needs	3.55 ± 1.25
Current employment status	**4.05 ± 1.29**
Access to food markets with nutritious food options	3.90 ± 1.34
Access to clean and safe water	**4.05 ± 1.25**
Completed secondary education	3.85 ± 1.28
Family support during pregnancy	3.75 ± 0.89

Access to healthcare services, including antenatal care	3.95 ± 1.25
Feeling safe and secure in the community	3.70 ± 1.19
Awareness of community support resources	3.75 ± 1.30
Access to adequate sanitation facilities	3.90 ± 1.26

Values are presented as mean ± standard deviation (5-point Likert scale).

The results show Most participants were aged 31–40 years (40.7%), married (77.0%), and had primary (33.3%) or tertiary (31.4%) education and the presence of respondents with no formal education (14.7%) possibly impacting nutritional behaviors and the capacity to make informed choices. (table 1). Maternal undernutrition was highly prevalent, with 75.0% of pregnant women classified as undernourished (MUAC <23.0 cm). The prevalence of undernutrition was highest at Jowle Health Center (81.3%), followed by Jilab (76.0%) and Barwaqo (64.0%). Anemia affected 95.0% of participants, while pallor was the most common physical sign of malnutrition (62.2%), followed by skin and hair changes (52.8%) (Table 2).

The findings indicate a high influence of cultural factors on maternal nutrition, with mean scores ranging from 3.25 to 4.05. Cultural practices such as avoiding certain foods due to traditional beliefs and the influence of elder family members had the highest mean scores (4.05 ± 1.29 and 4.05 ± 1.16, respectively), while women's role in household food decisions had the lowest mean score (3.25±1.38), indicating relatively lower autonomy in food-related decision-making (Table 3).

The findings indicate a high influence of socio-economic factors on maternal nutrition, with mean scores ranging from 3.55 to 4.05. Current employment status and access to clean and safe water had the highest mean scores (4.05 ± 1.29 and 4.05 ± 1.25, respectively), while household income sufficient to meet basic needs had the lowest mean score (3.55 ± 1.25), suggesting that financial constraints remain a challenge for some pregnant women (Table 4).

3.2. Multivariate Analysis

Tables 5–7 present the relationship between cultural factors, socio-economic factors, and nutritional status among pregnant women.

Table 5 Chi-Square Test Results

Variable	χ^2	Df	p-value
Cultural beliefs (Supportive/Restrictive)	11.23	1	0.001
Socio-economic status (Sufficient/Insufficient)	9.40	1	0.002

*****Significant at 5%***

Table 6 Logistic Regression

Variable	B	SE	Wald	df	Sig.	OR	95% CI for OR
Cultural factors (mean score)	-0.56	0.24	5.49	1	0.019	0.57	0.36 - 0.90
Socio-economic status (mean score)	0.60	0.20	9.00	1	0.003	1.82	1.23 - 2.69

*****Significant at 5%***

Table 7: Correlation Analysis

Variable	Correlation coefficient (r)	Sig. (2-tailed)
Cultural factors & MUAC	-0.45	0.003
Socio-economic status & MUAC	0.58	0.001

****. Correlation is significant at the 0.05 level (2-tailed).***

The chi-square analysis showed significant relationship between cultural beliefs and nutritional status ($\chi^2 = 11.23$, $p = 0.001$) and between socio-economic status and nutritional status ($\chi^2 = 9.40$, $p = 0.002$), indicating that both factors were significantly associated with maternal nutritional status (Table 5).

Logistic regression analysis showed that cultural factors and socio-economic status

were significant predictors of maternal nutritional status. Restrictive cultural factors were associated with lower odds of normal nutritional status (OR = 0.57, 95% CI: 0.36–0.90, p = 0.019), whereas better socio-economic status increased the odds of normal nutritional status (OR = 1.82, 95% CI: 1.23–2.69, p = 0.003) (Table 6)

Correlation analysis showed a significant negative correlation between cultural factors and MUAC (r = −0.45, p = 0.003) and a significant positive correlation between socio-economic status and MUAC (r = 0.58, p = 0.001), indicating that restrictive cultural factors were associated with poorer nutritional status, whereas better socio-economic status was associated with improved nutritional status (Table 7).

3.3 Qualitative Findings

Qualitative findings identified cultural beliefs and socio-economic constraints as key influences on maternal nutritional status. Participants reported that food taboos, traditional beliefs, and family expectations affected food choices during pregnancy. Poverty, food insecurity, and limited household income further restricted access to diverse and nutritious foods. Health workers confirmed that these cultural and economic challenges contributed to maternal undernutrition and emphasized the need for culturally appropriate nutrition education and improved household food security.

4. DISCUSSION

This study found a high prevalence of maternal undernutrition, with 75.0% of women having MUAC <23.0 cm, and anemia affected 95.0% of participants. The magnitude of undernutrition is concerning in light of recent evidence from Somalia. A 2026 facility-based study in Mogadishu reported a similarly high prevalence of undernutrition (75.7%) among pregnant women, using the same MUAC <23 cm threshold (Tahlil et al., 2026). Earlier research among women attending an IDP-serving health and nutrition facility in Mogadishu also used MUAC <23 cm to identify undernutrition among pregnant and lactating women, demonstrating the relevance of MUAC for nutritional screening in displaced populations (Grijalva-Eternod et al., 2021).

Cultural factors were significantly associated with nutritional status in the present study. Restrictive cultural factors were associated with lower odds of normal nutritional status (OR = 0.57, 95% CI: 0.36–0.90). The qualitative findings support this relationship, as women reported food taboos, traditional beliefs, and family expectations affecting dietary choices. This finding is consistent with systematic reviews showing that cultural beliefs and social networks can influence food restrictions and dietary practices during pregnancy (de Diego-Cordero et al., 2021; Gebregziabher et al., 2023). A systematic review and meta-analysis in Ethiopia also found that food-taboo practices are common among pregnant women and may restrict nutrient-rich foods (Debela et al., 2023).

Socio-economic status was also significantly associated with nutritional status. Women with better socio-economic conditions had higher odds of normal nutritional status (OR = 1.82, 95% CI: 1.23–2.69). This relationship is plausible because household economic resources influence the ability to obtain sufficient and diverse foods. Evidence from systematic reviews indicates that food insecurity during pregnancy is associated with adverse maternal and pregnancy-related outcomes and that interventions addressing food insecurity may include food assistance, cash transfers, nutrition counselling, and other integrated approaches (Augusto et al., 2020; McKay et al., 2022).

The qualitative findings further demonstrated how cultural and economic constraints interact. Participants described poverty and limited food availability alongside cultural expectations that restricted their dietary choices. In humanitarian settings, UNICEF recommends combining nutrition services with food assistance, social protection, and context-appropriate nutrition counselling to address the multiple

determinants of maternal nutrition (UNICEF & Global Nutrition Cluster, 2024).

The very high prevalence of anemia observed in this study also indicates a substantial maternal nutrition burden. The World Health Organization identifies anemia as an important public health concern among pregnant women and provides updated hemoglobin guidance for defining anemia (World Health Organization, 2024). Because hemoglobin values in this study were extracted from routine ANC records rather than measured directly by the research team, the findings reflect the available clinical records and should be interpreted in that context.

Overall, the findings suggest that improving maternal nutritional status in Garowe IDP camps requires interventions that address both immediate nutritional needs and the social conditions shaping food choices. Nutrition counselling should be culturally sensitive and involve influential family members where appropriate, while food-security and livelihood interventions should improve access to nutritious foods. These approaches are consistent with the multi-sectoral maternal nutrition framework recommended for humanitarian settings (UNICEF, 2022; UNICEF & Global Nutrition Cluster, 2024).

6. CONCLUSION

This study assessed the influence of cultural and socio-economic factors on the nutritional status of pregnant women attending antenatal care in IDP camps in Garowe, Somalia. The findings revealed a high prevalence of maternal undernutrition (75.0%) and anemia (95.0%), with cultural beliefs, food taboos, poverty, and food insecurity significantly influencing maternal nutritional status. Addressing maternal undernutrition in humanitarian settings requires culturally sensitive nutrition education, improved household food security, and livelihood support to enhance access to nutritious foods.

Declaration by Authors

Ethical Approval: Approved.

Acknowledgement: None.

Source of Funding: None.

Conflict of Interest: The authors declare no conflict of interest

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How to cite this article: Ruweyda Hussein Jama, Lawrence Mugambi[1], Rose Juma. Influence of cultural and socio-economic factors on the nutritional status of pregnant women in Garowe Camps of internally displaced persons, Puntland, Somalia. *International Journal of Research and Review*. 2026; 13(8): 297-304. DOI: *https://doi.org/10.52403/ijrr.20260828*

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